





XX	Transgenic; swine; porcine; alpha(1,3) galactosyltransferase;
KW	antisense; ribozyme; Gal-alpha-1,3-Gal-beta-1,4-GlcNAc; epitope;
KW	terminal; xenogenic; transplant; rejection; gene therapy; pig; ss.
XX	
OS	Sus scrofa.
XX	
FH	Key
FT	16..1131
FT	/*tag= a
XX	
PN	W05528412-A1.
XX	
PD	26-OCT-1995.
XX	
PE	31-MAR-1995; 95WO-0503940.
XX	
PR	13-APR-1994; 94US-0228933.
PA	(BIOT-) BIOTRANSPLANT INC.
PA	(GEHO-) GEN HOSPITAL CORP.
PA	(CHIL-) INST CHILD HEALTH.
XX	
P1	Baetscher MW, Gustafsson KT, Sachs DH;
XX	
DR	WPI: 1995-371759/48.
DR	P-PSDB; AAR85082.
XX	
PT	Novel transgenic alpha (1,3) galactosyltransferase negative swine
PT	used to produce rejection resistant cells for xenogenic
PT	transplantation
XX	
PS	Claim 11; Pages 35-37; 56pp; English.
XX	
CC	Transgenic swine in which the normal expression of the alpha (1,3)
CC	galactosyltransferase (AGT) AAR85082 is prevented, are prepd. by
CC	inhibiting the expression of the AGT gene AAT02892 using antisense
CC	oligonucleotides or ribozyme inactivators in a pluripotent porcine
CC	embryonic stem cell. It is then inserted into a porcine oocyte
CC	(from which the pronuclear material has been removed), which is
CC	itself grown to produce the transgenic swine. Swine which do not
CC	express AGT will not produce carbohydrate moieties contg. the
CC	distinctive terminal Gal-alpha-1,3-Gal-beta-1,4-GlcNAc epitope,
CC	which is a significant factor in xenogenic (esp. human) transplant
CC	rejection of swine grafts. Therefore the swine cells produced in
CC	the AGT negative transgenic swine are xenogenic transplant
CC	rejection resistant, and can therefore be used by a transplant
CC	recipient, or to provide gene therapy.
XX	
XX	
XX	Sequence 1269 BP; 384 A; 261 C; 304 G; 320 T; 0 other;

Query Match	Similarity	66.3%	Score 863.6	DB 16	Length 1269
Best Local Similarity	87.1%		Pred. No. 3.6e-237		
Matches	989	Conservative	0	Mismatches 129	Indels 18
					Gaps 3
QY	180	atgaagagadaataagaaatgaagaagaaagtaattctgcgaatgcgtgtattctca	239		
Db	2	atgaagagaaataatagatgcgaagaaagagtggtctctgcgaatgcgtcttctca	61		
QY	240	ctatcatctgtgtgttttctggaatatatccacagcccaagaagctcttctgtctgata	299		
Db	62	ctgtatcatgtgtgtgtttctggaatcacatccacagcccaagaagctcttctgtctgatat	121		
QY	300	accctatcaagaaacccaanaatcatctatgctggaagcagcatcttaagaaggtctgtgtctc	359		
Db	122	accatcatcaaaaaccaccagaatc-----tgcagagagtgctctagaagagctgtgtcttc	175		
QY	360	cgaaatgatttaaacatg-----gttaccctaaagaagaatgaagacgtataacgaag	410		
Db	176	cgagctctgttlaacatctgagatccatctaccacgaagaagaagaagcgtataagagaag	235		
QY	411	aaaaggaacaaagaaagaaagacaa--aaagcaactttaagctatctgagatgtgtcaac	467		

Db	236	aaagggacacaaagaagaagacaaacagagagagcttccgtctatgagctgatttacc	295
Oy	468	cattlaaacgccttgagatctgtaactatgacaaacttggaaagcaccctcgatctgagaa	527
Db	296	ctgagaaacgcctcagagatctgtagccataaccagatggagatctccatgattatagaa	355
Oy	528	gcatctcaacagagcgtcttttagacgattactacgcgcagacagaaatattcgcgcagcc	587
Db	356	gcacltcaaaacagacgcctcttgaataaattatataagcnaaacagaaatataccgagcct	415
Oy	588	tacacgcttttcgcgtctcgaagatacatatgagatctacttgaagagagctcttaacgctc	647
Db	416	tgcagcttttgcgtctcgcgcagagatactatgagattactttagagagctctttaatactg	475
Oy	648	ctataaacacttcaatgatttgcgccaccgaatcctcttaacgctaatgattaaagagctct	707
Db	476	caataatacatattcaatggatggcccaaaatctctttatcatcatagttgagatatactc	535
Oy	708	ccagatgacctttgtagagcttgagcctcttgccctcttcgaagagcttttagagctcaac	767
Db	536	ccagatagccttttgaatagagctgagcctcttgccctcttcgaagagcttttagagctcaac	595
Oy	768	ctgaagagagatggacagacagacatcatgctgctgacataaagccatctcgagagccatct	827
Db	596	ctgagaaagagctggcgaagacatcatgctgctgacataaagccatctcgagagccatctc	655
Oy	828	tgcgcacatctccacgtctgagcttccctctctccatccatagacgtcttcc	887
Db	656	tgcgcacatctccacgacgaggtgaaattccctctctctctgcatgagacgttgcagatcttc	715
Oy	888	aagacgcgttctgagctggagaaacctcttgagtgaaatccgtatgcacagacgtctgct	947
Db	716	aaacaaactttggagctggagaaacctcttgagtgaaatccgtatgcacagacgtctgct	775
Oy	948	acaaagcgcacatcccgatgagctttaccttaccagaaagcgcacagagctctgagacatctc	1007
Db	776	acaaagcgcacatcccgagatcttaccctaccagagagcgcagaaagagctctgcagccctac	835
Oy	1008	ctcttcgacgaagagatctttatataccacgcagacatcttttgagggaaaccccatctcag	1067
Db	836	cgcttgcgcagggagattttatataccagcagacatcttttgagggaaaccccatctcag	895
Oy	1068	tcttaccatctaccgcaggaatgctttcaaaagaaatcttccaaagacagaaataatgatact	1127
Db	896	tcttaccatctaccgcaggaatgctttcaaaagaaatcttccaaagacagaaataatgatact	955
Oy	1128	aagccacatgcatactgaaagacatcttlaaacagaatcttctctccaaacacccatata	1187
Db	956	aagccacatgcatactgaaagacacatcttlaaacagaatcttctctccaaacacccatata	1015
Oy	1188	aaactctatccccgaatactgctgagatatacatataagcctactgcgaatatataac	1247
Db	1016	aaactctatccccgaatactgctgagatatacatataagcctactgctgagatatacat	1075
Oy	1248	ttgtccagagctcttgcgcagacaaagaatataatgattgcttgaataaacgtctga	1303
Db	1076	ttgtccagagatgctgctgcagaaaaaagaatataatgattgcttgaataaacatctga	1131
<p> <b>RESULTS</b> 3  <b>AAV49453</b>  <b>AAV49453</b> standard; cDNA to mRNA; 1128 BP.  <b>AAV49453:</b>  10-NOV-1998 (first entry)  Porcine alpha-1,3-galactosyl transferase isoform 1 cDNA.  Isoform: porcine; enzyme: alpha-1,3-galactosyl transferase; galactose:  sugar: N-acetyllactosamine; glycoprotein: glycolipid; antibody: pig;  tissue: graft rejection; organ transplantation; xenotransplant; ss. </p>			













Query Match 59.0%: Score 769.2; DB 19; Length 1065;  
 Best Local Similarity 82.9%: Pred. No. 3.5e-210;  
 Matches 929; Conservative 0; Mismatches 128; Indels 63; Gaps 2;

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QY 187 gaaataatgattgcaagaagaaagatgcttcgaatgctggttcgaatgctat 246
DB 6 gaaataatgattgcaagaagaaagatgcttcgaatgctggttcgaatgctat 65
QY 247 tcttctgatttgggaatataatccacagcccaagacgtcttcttctgataaaccac 306
DB 66 gcttctgatttgggaatataatccacagcccaagacgtcttcttctgataaaccac 125
QY 307 aagaacaccagagatctgagcgagcagcattcagaagagctggttccgagatg 366
DB 126 aagatctc----- 133
QY 367 gtttaacatgtgttaccagaagaagatgaagacgttgaagcagaagaagaagaaga 426
DB 134 -----acagttaccacagaagaagaagacgttgaagcagaagaagaagaaga 185
QY 427 ggaagacaa--aagcaagcttaagctacagactgttcaaccatttaacgccttga 483
DB 186 aagaagacaaagagagagagcttccactagtgactgtttaaactcttgagaagcccca 245
QY 484 ggttctgactatgacagatgtgaagagcccgctgtgtgtgaagcacttacacagagc 543
DB 246 ggttctgactatgacagatgtgaagagcccgctgtgtgtgaagcacttacacagagc 305
QY 544 gcttctgacgatttactaagcagaagaattccgctgcgcctgacggttcttgcgct 603
DB 306 gcttctgacgatttactaagcagaagaattccgctgcgcctgacggttcttgcgct 365
QY 604 cgaagacatacatgacatcttctgagagagcttcaacgtctgataaagacatctcat 663
DB 366 cgaagacatacatgacatcttctgagagagcttcaacgtctgataaagacatctcat 425
QY 664 gatttgcacacgagatcttcttcaactagtgagcagcgtctccagagatgcttgc 723
DB 426 gatttgcacacgagatcttcttcaactagtgagcagcgtctccagagatgcttgc 485
QY 724 aagagctgagcctctgagccttcaaaagtgttgaagcagccttgagaagagtgga 783
DB 486 aagagctgagcctctgagccttcaaaagtgttgaagcagccttgagaagagtgga 545
QY 784 ggaacttcaagatgagcagatgaagaacacctcgagagacacatctgtccacatcca 843
DB 546 ggaacttcaagatgagcagatgaagaacacctcgagagacacatctgtccacatcca 605
QY 844 tgaagtttaactctctctctgacagcgtgagcaggtctccagaagcaggttcgag 903
DB 606 tgaagtttaactctctctctgacagcgtgagcaggtctccagaagcaggttcgag 665
QY 904 ggaagccctgggttgagtggtgagccagctagaagcctggttgtaagagcagatcca 963
DB 666 ggaagccctgggttgagtggtgagccagctagaagcctggttgtaagagcagatcca 725
QY 964 taagtttaccttcaagagcagaagcagatcttcaagacatcttcccttcgagaagag 1023
DB 726 cgaagtttaccttcaagagcagaagcagatcttcaagacatcttcccttcgagaag 785
QY 1024 ttttatttaccagcagcagcatttcttggggaagacccactcaggtcttaacatcca 1083
DB 786 ttttatttaccagcagcagcatttcttggggaagacccactcaggtcttaacatcca 845
QY 1084 ggaatgcttcaagaagaatctcaagagacaaataatgacatgagaagcccatgcatga 1143
DB 846 ggaatgcttcaagaagaatctccacagacaaataatgacatgagaagcccatgcatga 905
QY 1144 tgaagacatcttaacaaagtatttcttcttcaacaaacccacttaaatcttaccgga 1203
DB 906 tgaagacatcttaacaaagtatttcttcttcaacaaacccacttaaatcttaccgga 965

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QY 1204 atactgtgagattatcatatagagccctactcgtgagatataaactgttcaatctt 1263
DB 966 atactgtgagattatcatatagagccctactcgtgagatataaactgttcaatctt 1025
QY 1264 gcagacaaagatataatgagtttgaagaataacgtctga 1303
DB 1026 gcagacaaagatataatgagtttgaagaataacgtctga 1065

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## RESULT 9

AAV49456

ID AAV49456 standard; cDNA to mRNA; 1029 bp.

AC AAV49456;

DT 10-NOV-1998 (first entry)

DE Porcine alpha-1,3-galactosyl transferase isoform 4 cDNA.

KW Isoform; porcine; enzyme; alpha-1,3-galactosyl transferase; galactose;

KW sugar; N-acetyllactosamine; glycoprotein; glycolipid; antibody; pig;

KW graft tissue rejection; organ transplantation; xenotransplant; ss.

OS Sus scrofa.

XX

XX

XX

PN FR2751346-A1.

PP 23-JAN-1998.

PE 19-JUL-1996; 96FR-0009077.

PR 19-JUL-1996; 96FR-0009077.

XX

XX

XX

PI Pourcel C, Souillou JP, Vanhove B;

DR WPI: 1998-112876/11.

DR P-PSDB; AAM49689.

XX

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XX

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XX

PS Claim 4; Page 43-44; 71pp; French.

CC This sequence represents the cDNA encoding isoform 4 of the porcine

CC enzyme alpha-1,3-galactosyl transferase (alpha-1,3-GT). The enzyme

CC catalyses the attachment of a galactose sugar molecule on the

CC N-acetyllactosamine moiety found on surface glycoproteins and

CC glycolipids. These sugar molecules are partly responsible for raising

CC anti-graft antibodies, which lead to graft tissue rejection. The

CC invention relates to a method of inhibiting the graft rejection mechanism

CC by introducing the sequence encoding an antibody targeted to alpha-1,3-GT

CC into the cells of animal, especially a pig, from whom organs may be used

CC for xenotransplants. Neutralisation of the alpha-1,3-GT leads to tissues

CC or organs lacking the galactose on the glycoproteins and glycolipids,

CC thus preventing induction of the rejection response.

CC

XX

XX

SQ Sequence 1029 bp; 310 A; 216 C; 257 G; 246 T; 0 other;

Query Match 56.4%: Score 735.4; DB 19; Length 1029;  
 Best Local Similarity 87.7%: Pred. No. 1.6e-200;  
 Matches 815; Conservative 0; Mismatches 111; Indels 3; Gaps 1;

QY 378 gttaccagaagaagatgagacgtgagcagaagaagaacacaaagaaagaaacaa 437



Db	358	ctgtgtaaaagtaactacgacacagaadaactcaatcgctgggagctgacagtgtttctgtc	411
QY	605	qgaagatatacatagatratattctgagagatcttctaagctctgataaagaactatcatg	664
Db	418	ggaaagatacatctgagcttactcttagaagacttcttgagctctgatacatgtaactatcatg	477
QY	665	gttggccaccagatcatcttctaagctatgttgagagactctccagatgagcttgata	724
Db	478	gttgcacatcgtgataattttaaqtatataagaacacccctccgagagctgtcgtg	537
QY	725	gaactggacccctctgctctcttcaaaatgttttgaagctcaagctctgagaaagtgcacg	784
Db	538	caactggaacccctctacatctcttcaagaagctcttgagatcaggtctgagaaagtgcag	597
QY	785	gaactacagatagtgtgcacalgaagaacatctggagagacatcgttgccacatccacgt	844
Db	598	gatactcagcatgatgcacalgaagaacatctggagagacatctctgcccacatccacac	657
QY	845	gagatctaacttccctctctcatggagatgttgaccaggtcttccaagagatctcgagtg	904
Db	658	gagatcaacttctctctctgcacalgaagagatgtgataaacttcttaagaacatctcgagtg	717
QY	905	gagacccctgagatgtatcgtgtgcacagcttacaagcctgtgtgtacaaagagatcccgat	964
Db	718	gaaactctggtccgcctgtgtgacagctctcagcctgtgtgtgaaagagcagctcccgag	777
QY	965	gaatttaccatacagaaagacgaagatctctgcagcatcaatctccctctggcgaaggagat	1022
Db	778	aacttccactatgagaaagcagaaactgtctggccgtgtacatctcattctggagaggagat	837
QY	1025	tttatcttaccagagagacatlttttggaggaaacccctcaggtctcttaacatcacccg	108
Db	838	tttacttaccagagagacatlttttggaggaaacccctcaggtctcttaacatcacccg	897
QY	1085	gaatgacttcaaaaggaatctctcaagaaagaadaaaatgtacataaagcccatgtcatgat	114
Db	898	gagtgcttaagtgatctccctccagagaaagaacatgagacttagaagccagtgagcatgat	957
QY	1145	gagagatcatcttaaacagatattctcttccaacaaacccaataaactatctcccgaa	120
Db	958	gagagatcatcttcaaacatattctcttccaacaaacccaataaactatctctccag	1011
QY	1205	tactgtctgagattatcatatagcttaccctcgcgagatatagctgttcaagatgtcttg	126
Db	1018	tattgtctgagattatcatatagcttaccctctcgagatatlaaagtgltcaagtgatcttg	107
QY	1265	cagacaaagatataatgtgttgaagaataacgtctga	1303
Db	1078	cagacaaagatataatctgtgttagaataaagatctga	1116
RESULT 11			
AAQ74711			
ID	AAQ74711 standard; cDNA to mRNA; 1353 BP.		
XX	AAQ74711:		
AC	26-JUN-1995 (11st entry)		
XX	Galactosyl transferase 3' clone.		
DT	Gal-alpha (1,3) galactosyl transferase; xenograft; transplant;		
KW	rejection; ss.		
KM	Sus scrofa domestica.		
XX	Key		
FT	Location/Qualifiers		
FT	CDS 1..942		
XX	/*tag= a		
XX	W09421799-A.		
XX	29-SEP-1994		

PF	15-MAR-1994:	94WO-AU00126.
XX	16-MAR-1993:	93AU-0007854.
XX	(AUST-)	AUSTIN RES INST.
XX	Mckenzie IFC,	Sandrin MS.
XX	WP1: 1994-317019/39.	
XX	P-PSDB: AAR62507.	
XX	DNA sequences encoding Gal-alpha (1,3)galactosyl transferase -	
XX	and clones contg. such sequences are used in xenograft therapies	
XX	Claim 1: Page 31: 50pp: English.	
XX	The sequence is that of the porcine Gal-alpha (1,3) galactosyl	
XX	transferase gene which produces a Gal epitope on the surface of	
XX	porcine cells. This epitope is recognised by antibodies which are	
XX	responsible for hyperacute rejection of xenotransplanted pig cells,	
XX	tissues and organs.	
XX	See also AA074712-4.	
XX	Sequence 1353 BP: 369 A; 325 C; 314 G; 345 T; 0 other:	
XX		
XX	Query Match:	52.1% Score 678.8; DB 15: Length 1353;
XX	Best Local Similarity 85.6%: Pred. No. 3,1e-184:	
XX	Matches 755; Conservative 0; Mismatches 127; Indels 0; Gaps	
OY	422	agaaagaagaacaaagcaagcttaagctatcgagctggtcaaccattlaagccct 481
Db	61	agagctgtgaccttaagcaaaacacatctgaccttaqtlttgcaagaaaccccca 120
OY	482	gaggttgcgatacgacagatitgaagagcccgatgtggaagagcatctaacaga 541
Db	121	gaagtcgagacacataaccagaatggaaggtcccatgtgataaggaagcatatacaca 180
OY	542	gccctcttaagacgattactacgcgcaagcaaaaattlacggttcagcctgacggtttttgccc 601
Db	181	gccgcgttaagttaattattatgaaccaacagaaattacggttgctgaggtttttgtc 240
OY	602	gtcggaaagatacatttgagcattacttgagaggaqgtcttcaacgtctgcataataaqaacttc 661
Db	241	gtcggaaagatacatttgagcattacttgagaggaqgtcttcaacgtctgcataataaqaacttc 300
OY	662	atggtttgcacacgagcattctttaaagtcacgtgtgagacgctctcccaagatctttg 721
Db	301	atggtttgcacacgagcattctttaaagtcacgtgtgagacgctctcccaagatctttg 360
OY	722	atagaagctgggcccctctgcgctccttcaaaagtgtttaaagtcacgcttgaagaaagatgag 781
Db	361	atagaagctgggcccctctgcgctcctttaaaggtgtttaaagtcacgcttgaagaaagatgag 420
OY	782	caggaagctcagacatggtgcgcatgaaagacacatcgaggaaganaatctgtgcccacatccag 841
Db	421	caagagcatcagacatggtgcgcatgaaagacacatcgaggaaganaatctgtgcccacatccag 480
OY	842	ctgagaggttgaacttcctcttcgtcgtacgtgacgtgagccaggtcttcccaagatgttgcag 901
Db	541	ctgagaggttgaacttcctcttcgtcgtacgtgacgtgagccaggtcttcccaagatgttgcag 600
OY	962	gataagtttacctacagagcgagcaaaagatctgcagcaataacttcccttcggtcgaagag 102
Db	601	gacagagttacctacagagcgagcaaaagatctgcagcaataacttcccttcggtcgaagag 660
OY	1022	gattttatttaccagcagccatttttgggggaacacacatctcaggtccttaacatcacc 108









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